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Gotz-Peter Schindler

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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/813,010
Filing Date: March 31, 2004
Appellant(s): SCHINDLER ET AL.

Frederick D. Vastine
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 11/03/08 appealing from the Office action mailed on 06/02/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|-----------------|------------------|--------|
| 5,550,309 | MAUNDERS et al., | 8-1996 |
| EP 0 938 463 B1 | MAHER et al., | 6-2002 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maher et al., EP 0 938 463 in view of Maunders et al., U.S. Patent Number 5,550,309.

Appellants claim a process for preparing at least one partial oxidation and/or

ammoxidation product of hydrocarbon by subjecting at least one saturated hydrocarbon H, to a heterogeneously catalyzed dehydrogenation in the gas phase to form a product gas mixture A, which comprises at least one partially dehydrogenated hydrocarbon H therein, or partly or fully removing them to obtain a product gas mixture A', as a constituent of a gas mixture B, to at least one heterogeneously catalyzed partial oxidation and/or ammoxidation of at least one partially dehydrogenated hydrocarbon H present in the product gas mixture A and/or product gas mixture A', which comprises subjecting the product gas mixture A, the product gas mixture A' and/or the gas mixture B, before the at least one heterogeneously catalyzed partial oxidation and/or ammoxidation, to at least one mechanical separating operation by which solid particles present in these gas mixtures are removed.

Determination of the scope and content of the prior art (MPEP §2141.01)

Maher et al., teach a process for converting alkanes into unsaturated aldehydes such as acrolein and acrylic acid, particularly, the conversion to the corresponding alkene in the presence of oxydehydrogenation catalyst and thereafter, alkanes, alkenes and the addition of oxygen to the effluent of the oxidation reaction and the mixture passed over a catalyst to convert the aldehyde to the corresponding carboxylic acid. Note the separation of the effluent into product stream comprising carboxylic acid and recycle gas stream. The residual gases are recycled back to the reaction zone to comprise a portion of the feed stream. See the entire reference especially page 2, column 2, lines 10-55, page 3, column 1, lines 1-57, page 6, column 10, line 19, Example 1 and claims 1-8.

Maunders et al., teach a process for the dehydrogenation of a hydrocarbon, which comprises sequentially contacting a feed with a catalyst in a reaction chamber. Note process steps (a) to (d). Maunders teaches that dehydrogenation of alkanes are

well known in the art. See the entire reference, especially column 1, lines 12-24; column 2, lines 7-10; column 5 lines 21-28.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the instant invention and Maher et al., is that the instant invention requires the stipulated convoluted process steps (claim 1), wherein mixtures A becomes A' and subsequently mixture B. However, there is no evidence of record to distinguish the process of Maher from the instant process because applicants' process steps are similar to that of Maher et al, less mixture A, mixture A' and mixture B. Note Maher teaches the requisite reactants and products i.e., propene to acrolein and/or acrylic acid; isobutene to methacrolein and/or methacrylic acid etc. Additionally, modifying process conditions such as the gas mixture contents are not a patentable modification absent a showing of criticality. *In re Aller*, 220 F .2d 454, 105 U.S.P.Q. 233 (C.C.P.A. 1955).

Finding of prima facie obviousness---rational and motivation (MPEP §2142-2143)

Thus, at the time of filing this application, one of ordinary skill in the art would have had a reasonable expectation of success in employing the process steps of Maher et al., because Maher et al. teach that dehydrogenation of alkanes to corresponding products such as acrolein are known and Maunders teaches that dehydrogenation is well known in the art. The requisite motivation being the desire to prepare various products by dehydrogenating alkanes to the corresponding products, which as the Maunders reference teaches is well known. Thus, a slight difference in the dehydrogenating zone of process parameters may serve to differentiate the process from under 35 U.S.C 102 but, does not serve to remove the relied upon references from under 35 U.S.C 103.

Therefore, at the time of filing this application, one of ordinary skill in the art in possession of Maher et al., would have had a reasonable expectation of success in practicing the instant invention absent a showing of unexpected results and/or properties.

(10) Response to Argument

Appellant's arguments have been noted and deemed unpersuasive in view of the convoluted response given and claim 1. Note dehydrogenated hydrocarbons as well as components other than saturated hydrocarbons have been designated as (H). Appellants next argue that they have observed that particles of dehydrogenation catalyst are conveyed from dehydrogenation zone into the subsequent zone where heterogeneous catalyzed partial oxidation or ammoxidation of the dehydrogenated hydrocarbon occurs and that promote undesired combustion which is undesirable and disadvantageous and hence, result in reactant consumption. Appellants further allege that this observation led to the present invention which is the avoidance of the removal of particles of dehydrogenation catalyst particles in the oxidation or ammoxidation zone. Appellant's comments have been noted. Note column 5, lines 1-20, where the removal and avoidance of combustion material is discussed. Appellants appear to argue that the current process is drawn to the removal of fine particles of dehydrogenation catalyst from gas mixtures (A) and (A') before the gases enter the partially oxidized and/or ammoxidation zone to produce the ammoxidation product. Again, note column 5, lines 1-20 where a similar teaching is shown. Appellants next argue about the existence of flash rust in the plant, which shows the existence of components of certain minerals.

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This is not taught by any of the references; however, there is no evidence that such a condition can not be present with any of the reference. Note that it is well settled that consideration of a reference is not limited to the preferred embodiments, but extends to the entire disclosure for what it fairly teaches, when viewed in light of the admitted knowledge in the art to one skilled in the art. Appellants next argue that Maher et al., teach a process of oxydehydrogenation of saturated hydrocarbon such as propane. This statement is not entirely correct since Maher teaches both oxydehydrogenation and dehydrogenation. Note Maher is producing products identical to the products made by the current process. Appellants next argue that Maunders does not teach a two stage process in which a saturated hydrocarbon starting material is dehydrogenated over a first type of heterogeneous catalyst and then passing the gas mixture obtained over a heterogeneous oxidation catalyst. Note that a single step process is *prima facie* obvious over a multistep process if everything else is the same. Moreover, Maher teaches that the process can be in a single reactor with one or more stages. See page 4, column 6, lines 35-37. Furthermore, Maher teaches that the type of reactor is not critical. See page 5, column 8, lines 34-39.

Thus, the reaction that is being claimed is a predictable and expected reaction.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

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